AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A method of reducing at least one of echo ~~and/or~~and noise signals in telecommunications systems for transmitting useful acoustic signals, ~~particularly human speech,~~ comprising:

determining by silence detection when ~~the~~ a mixture of useful signals and interference signals contains a speech signal or when a silence interval is present~~,~~; and

varying, by means of a two-input multiplier, the amplitude of the useful signals, which are generally disturbed by the at least one of echo ~~and/or~~and noise signals, in response to a time-dependent control signal $a_0(t)$ or a control signal $a_0(k)$ clocked at a sampling rate $f_T=1/T$, where $k \in \aleph$ denotes the number of samples~~,~~ and T denotes the period from one sample to the next,

~~characterized in that~~wherein the control signal $a_0(t)$ or $a_0(k)$ is varied in such a way that, in the presence of speech signals in the useful signals, the amplitude of the control signal $a_0(t)$ or $a_0(k)$ is set to a predetermined constant value c_0, ~~that~~

wherein, from the beginning of a silence interval in the useful signal, the amplitude of the control signal $a_0(t)$ or $a_0(k)$ is continuously reduced from one sample to the next according to the recursion formula

$$a_0(k+1) = a_0(k) \cdot \beta, \qquad \text{where } \beta < 1,$$

and ~~that~~wherein, after the end of a silence interval, $a_0(k)$ is set equal to c_0.

2. (currently amended): ~~A~~ The method as claimed in claim 1, ~~characterized in that~~ wherein the factor β is determined from the sampling rate f_T, a time constant τ_1, and a predefined constant factor c_1 according to the relation

$$\beta = c_1 \cdot \exp(-1/\tau_1 f_T).$$

3. (currently amended): ~~A~~ The method as claimed in claim 2, ~~characterized in that~~ wherein the time constant τ_1 is ~~chosen to be~~ between 50 ms and 150 ms~~, preferably $\tau_1 \approx 65$ ms~~.

4. (currently amended): ~~A~~ The method as claimed in claim 1, ~~characterized in that~~ wherein the constant value c_0 is ~~chosen to be~~ equal to 1.

5. (currently amended): ~~A~~ The method as claimed in claim 1, ~~characterized in that~~ wherein, at least one of during a silence interval ~~and/or~~ and in the presence of an echo signal, $a_0(k+1)$ assumes a predefined constant value c_2 if the preceding value $a_0(k)$ has become less than or equal to c_2.

6. (currently amended): ~~A~~ The method as claimed in claim 1, ~~characterized in that~~ wherein, at least one of during a silence interval ~~and/or~~ and in the presence of an echo signal and for $a_0(k) \leq c_2$, where c_2 is a predefined constant, ~~the~~ a power value of ~~the~~ a noise level N in

~~the~~ a communications channel currently being used is at least one of continuously measured ~~and/or~~and estimated, and

~~that~~ wherein, depending on the current noise level N, the control signal $a_0(k+1)$ is continuously adjusted according to $a_0(k+1) = f(N)$, where f(N) is a predetermined function of N.

7. (currently amended): ~~A~~ The method as claimed in claim 6, ~~characterized in that~~wherein the predetermined function f(N) is a function g(S/N), which depends on ~~the~~ a quotient S/N of ~~the~~ a power value of ~~the~~ a signal level S of the useful signals to be transmitted and the power value of the noise level N, or ~~that~~ the predetermined function f(N) is a function g'(N/S), which depends on the reciprocal of said quotient.

8. (currently amended): A method as claimed in claim 7, ~~characterized in that~~wherein, if 1/N<< 1 or S/N = 0 dB, the function f(N) or g(S/N), which begins with a constant value $f_0 > 0$ or $g_0 > 0$, respectively, rises to a maximum f_{max} or g_{max} in the range between N or S/N=10 dB to 15 dB, respectively, ~~preferably at N or S/N ≈ 12 dB, respectively,~~ and then decreases to a minimum value f_{min} or g_{min}, respectively, ~~preferably to~~ which is substantially 0 dB, respectively. ~~where 5 dB ≤ f_0, g_0 ≤ 10 dB, preferably 6 dB ≤ f_0, g_0 ≤ 8 dB, and where 20 dB ≤ f_{max}, g_{max} ≤ 30 dB, preferably f_{max}, g_{max} ≈25 dB.~~

9. (currently amended): ~~A~~ The method as claimed in claim 6, ~~characterized in that~~wherein the function f(N) or g(S/N) is linear in at least one section, respectively.~~in sections, preferably in all its sections.~~

10. (currently amended): ~~A~~ The method as claimed in claim 6, ~~characterized in that~~wherein the function f(N) or g(S/N) consists of polynomials ~~and is~~ represented by a skewed bell-shaped curve.

11. (currently amended): ~~A~~ The method as claimed in claim 6, ~~characterized in that~~wherein the functions f(N) and g(S/N) or g'(N/S) are chosen such that the reduction of the noise level N is aurally compensated in accordance with ~~the~~ a psychoacoustic mean value of ~~the~~ a spectrum audible by ~~the~~ a human ear.

12. (currently amended): ~~A~~ The method as claimed in claim 1, ~~characterized in that~~wherein, in addition to the detection and reduction of noise signals, the presence of echo signals is at least one of detected ~~and/or~~and predicted, and ~~that~~ the echo signals are suppressed or reduced.

13. (currently amended): ~~A~~ The method as claimed in claim 12, ~~characterized in that~~wherein, at least one of during a silence interval ~~and/or~~and in the presence of an echo signal and for $a_0(k) \leq c_2$, where c_2 is a predefined constant, ~~the~~ a power value of ~~the~~ a noise level N in ~~the~~ a communications channel currently being used is at least one of continuously measured ~~and/or~~and estimated, ~~and~~

~~that~~ wherein, depending on the current noise level N, the control signal $a_0(k+1)$ is continuously adjusted according to $a_0(k+1)=f(N)$, where f(N) is a predetermined function of N, ~~said method further characterized in that~~and

wherein the control signal $a_0(k+1)$ is continuously adjusted according to $a_0(k+1) = h(N, S, ES, \tau_E, ERL)$, where $h(N, S, ES, \tau_E, ERL)$ is a predetermined function of the noise level N, ~~the~~ a signal level S, ~~the~~ a useful signal ES ~~in the opposite direction~~transmitted from a speaking party, the constant delay τ_E of the echo signal, and an attenuation constant ERL of the amplitude of the echo signal.

14. (currently amended): ~~A~~ The method as claimed in claim 12, ~~characterized in that~~wherein the reduction of noise signals and the reduction of echo signals are controlled separately.

15. (currently amended): ~~A~~ The method as claimed in claim 12, ~~characterized in that~~wherein, during the time of an echo reduction, an artificial noise signal is added to the useful signal.

16. (currently amended): ~~A~~ The method as claimed in claim 15, ~~characterized in that~~wherein the artificial noise signal comprises an acoustic signal sequence perceived to be psychoacoustically pleasant ~~(= comfort noise)~~.

17. (currently amended): ~~A~~ The method as claimed in claim 15, ~~characterized in that~~wherein the artificial noise signal comprises a noise signal previously recorded during the current communication.

18. (currently amended): ~~A~~ The method as claimed in claim 1, ~~characterized in that~~wherein, in a silence detector (SPD), a short-time output signal sam(x), a medium-time output signal mam(x), and a long-time output signal lam(x) are formed by means of a short-time level estimator, a medium-time level estimator, and a long-time level estimator, respectively,

~~that~~ wherein the three output signals sam(x), mam(x), and lam(x) are so adjusted via suitable amplification coefficients that they are ~~approximately~~ substantially equal in magnitude when ~~the~~ an input signal x is a pure noise signal, with sam(x) < mam(x) < lam(x),

~~that~~ wherein the three output signals sam(x), mam(x), and lam(x) are monitored by comparators, and

~~that~~ wherein the presence of a speech signal as the input signal x is assumed when both sam(x) and mam(x) first become larger than lam(x), while the presence of a silence interval is assumed when thereafter at least one of sam(x) ~~and/or~~and mam(x) become smaller than lam(x).

19. (currently amended): ~~A~~ The method as claimed in claim 18, ~~characterized in that~~wherein, for silence interval estimation, the three output signals sam(x), mam(x), and lam(x) are fed to a neural network which was trained with a plurality of scenarios with different input signals x.

20. (currently amended): ~~A~~ The method as claimed in claim 1, ~~characterized in that~~wherein ~~the~~ a useful signal to be transmitted is subjected to a spectral subtraction.

21. (currently amended): ~~A~~ The method as claimed in claim 1, ~~characterized in that~~wherein ~~the~~ a useful signal to be transmitted is subjected to spectral filtering adapted to ~~the~~ a sense of human hearing.

22. (original): A server unit for supporting the method claimed in claim 1.

23. (original): A computer program for carrying out the method claimed in claim 1.

24. (new): The method as claimed in claim 3, wherein the time constant $\tau_1 \approx 65$ ms.

25. (new): The method as claimed in claim 8, wherein $f_0 \geq 5$ dB and $g_0 \leq 10$ dB.

26. (new): The method as claimed in claim 8, wherein $f_0 \geq 6$ dB and $g_0 \leq 8$ dB.

27. (new): The method as claimed in claim 8, wherein $f_{max} \geq 20$ dB and $g_{max} \leq 30$ dB.

28. (new): The method as claimed in claim 8, wherein $f_{max} \approx 25$ dB and $g_{max} \approx 25$ dB.

29. (new): The method as claimed in claim 8, wherein the constant value $f_0 > 0$ or $g_0 > 0$, respectively, rises to a maximum f_{max} or g_{max} in the range between N or S/N≈12 dB, respectively,

30. (new): The method as claimed in claim 9, wherein the function f(N) or g(S/N) is linear in all its sections, respectively.

31. (new): The method as claimed in claim 1, wherein the useful acoustic signals include human speech.